CLAIMS

We claim:

1. A system for processing markup data for a map on a personal digital assistant comprising:

(a) a personal digital assistant;

(b) an application on the personal digital assistant, the application configured to:

(i) obtain a map as an encoded and spatially indexed vector representation of geographic data from a server;

(ii) display the map on a screen of the personal digital assistant;

(iii) obtain markup data comprised of pixel data from a user that utilizes a stylus to markup the map displayed on the personal digital assistant;

(iv) create a file comprised of the markup data;

(v) upload the file of markup data from the personal digital assistant to the server.

2. A system for processing mark up data for a map comprising:

(a) a personal digital assistant; and

(b) an application on the personal digital assistant, the application configured to:

(i) obtain a file comprised of markup data for a map; and

(ii) upload the file to a server.

3. The system of claim 2 wherein the markup data comprises pixel data for a markup entity.

4. The system of claim 2 wherein the personal digital assistant obtains the file by obtaining markup data from a user.

5. The system of claim 4 wherein the markup data is a redline line.

6. The system of claim 5 wherein the application configured to obtain the markup data from a user is further configured to:

(a) determine when a new redline object has been selected; and

(b) obtain a redline object while a stylus remains in contact with a screen of the personal digital assistant.

7. The system of claim 6, the application configured to obtain further configured to:

(a) display a text edit dialog box on the screen of the personal digital assistant; and

(b) accept text user input in the text edit dialog box.

8. The system of claim 4 wherein the markup data is a note.

9. The system of claim 8 wherein the application configured to obtain the markup data from a user is further configured to:

(a) determine when a new note object has been selected;

(b) accept a user selection of an anchor point in a display of a map on the personal digital assistant;

(c) display a text entry screen on the personal digital assistant;

(d) accept text user input in the text entry screen; and

(e) display an icon representative of a note at the anchor point.

10. The system of claim 2 wherein the application uploads the data to a server by:

(a) obtaining a socket connection;

(b) obtaining an inventory of resident mapsets;

(c) searching for markup data associated with the resident mapsets; and

(d) uploading all resident markup data to the server.

11. The system of claim 10 wherein the markup data is uploaded to a server directory on the server using a hypertext transfer protocol PUT request.

12. The system of claim 10, the application on the personal digital assistant further configured to:

(a) download any new mapsets;

(b) delete unreferenced mapsets; and

(c) delete any markup data associated with the deleted mapsets.

13. A system for processing mark up data for a map comprising a server configured to:

(a) obtain a file comprised of markup data for a map;

(b) convert the markup data to coordinate data; and

(c) use the coordinate data to obtain a standard data format (SDF) file that can be used to superimpose the markup data on the map.

14. The system of claim 13 wherein the coordinate data comprises mapping coordinate system (MCS) coordinates and the server is further configured to convert the MCS coordinates to latitude/longitude coordinates.

15. A graphical user interface for obtaining redline markup data for a map on a personal digital assistant, the graphical user interface comprising:

(a) determining when a new redline object has been selected; and

(b) obtaining a redline object while a stylus remains in contact with a screen of the personal digital assistant.

16. The graphical user interface of claim 15 further comprising:

(a) displaying a text edit dialog box on the screen of the personal digital assistant; and

(b) accepting text user input in the text edit dialog box.

17. The graphical user interface of claim 16 further comprising synchronizing the redline markup data with a server.

18. A graphical user interface for obtaining note markup data for a map on a personal digital assistant, the graphical user interface comprising:

(a) determining when a new note object has been selected;

(b) accepting a user selection of an anchor point in a display of a map on a personal digital assistant;

(c) displaying a text entry screen on the personal digital assistant;

(d) accepting text user input in the text entry screen; and

(e) displaying an icon representative of a note at the anchor point.

19. The graphical user interface of claim 18 further comprising synchronizing the redline markup data with a server.

20. A method for processing markup data for a map comprising:

obtaining a file comprised of markup data for a map on a personal digital assistant; and

uploading the file from the personal digital assistant to a server.

21. The method of claim 20 wherein the markup data comprises pixel data for a markup entity.

22. The method of claim 20 wherein the obtaining comprises obtaining markup data from a user.

23. The method of claim 22 wherein the markup data is a redline line.

24. The method of claim 23 wherein the obtaining the markup data from a user comprises:

(a) determining when a new redline object has been selected; and

(b) obtaining a redline object while a stylus remains in contact with a screen of the personal digital assistant.

25. The method of claim 24, the obtaining further comprising:

(a) displaying a text edit dialog box on the screen of the personal digital assistant; and

(b) accepting text user input in the text edit dialog box.

26. The method of claim 22 wherein the markup data is a note.

27. The method of claim 26 wherein the obtaining the markup data from a user comprises:

(a) determining when a new note object has been selected;

(b) accepting a user selection of an anchor point in a display of a map on

the personal digital assistant;

(c) displaying a text entry screen on the personal digital assistant;

(d) accepting text user input in the text entry screen; and

(e) displaying an icon representative of a note at the anchor point.

28. The method of claim 20 wherein the uploading the data to a server comprises:

(a) obtaining a socket connection;

(b) obtaining an inventory of resident mapsets;

(c) searching for markup data associated with the resident mapsets; and

(d) uploading all resident markup data to the server.

29. The method of claim 28 wherein the markup data is uploaded to a server directory on the server using a hypertext transfer protocol PUT request.

30. The method of claim 28 further comprising:

(a) downloading any new mapsets;

(b) deleting unreferenced mapsets; and

(c) deleting any markup data associated with the deleted mapsets.

31. A method processing mark up data for a map comprising:

(a) obtaining a file comprised of markup data for a map;

(b) converting the markup data to coordinate data; and

(c) using the coordinate data to obtain a standard data format (SDF) file that can be used to superimpose the markup data on the map.

32. The method of claim 31 wherein the coordinate data comprises mapping coordinate system (MCS) coordinates and the method further comprises converting the MCS coordinates to latitude/longitude coordinates.

33. A method for obtaining redline markup data for a map on a personal digital assistant, the method comprising:

(a) determining when a new redline object has been selected; and

(b) obtaining a redline object while a stylus remains in contact with a screen of the personal digital assistant.

34. The method of claim 33 further comprising:

(a) displaying a text edit dialog box on the screen of the personal digital assistant; and

(b) accepting text user input in the text edit dialog box.

35. The graphical user interface of claim 34 further comprising synchronizing the redline markup data with a server.

36. A method for obtaining note markup data for a map on a personal digital assistant, the method comprising:

(a) determining when a new note object has been selected;

(b) accepting a user selection of an anchor point in a display of a map on a personal digital assistant;

(c) displaying a text entry screen on the personal digital assistant;

(d) accepting text user input in the text entry screen; and

(e) displaying an icon representative of a note at the anchor point.

37. The graphical user interface of claim 36 further comprising synchronizing the redline markup data with a server.

38. An article of manufacture comprising a program storage medium readable by a computer hardware device and embodying one or more instructions executable by the computer hardware device to perform a method for processing markup data for a map, the method comprising:

obtaining a file comprised of markup data for a map on a personal digital assistant; and

uploading the file from the personal digital assistant to a server.

39. The article of manufacture of claim 38 wherein the markup data comprises pixel data for a markup entity.

40. The article of manufacture of claim 38 wherein the obtaining comprises obtaining markup data from a user.

41. The article of manufacture of claim 40 wherein the markup data is a redline line.

42. The article of manufacture of claim 41 wherein the obtaining the markup data from a user comprises:

(a) determining when a new redline object has been selected; and

(b) obtaining a redline object while a stylus remains in contact with a screen of the personal digital assistant.

43. The article of manufacture of claim 42, the obtaining further comprising:

(a) displaying a text edit dialog box on the screen of the personal digital assistant; and

(b) accepting text user input in the text edit dialog box.

44. The article of manufacture of claim 40 wherein the markup data is a note.

45. The article of manufacture of claim 44 wherein the obtaining the markup data from a user comprises:

(a) determining when a new note object has been selected;

(b) accepting a user selection of an anchor point in a display of a map on

the personal digital assistant;

(c) displaying a text entry screen on the personal digital assistant;

(d) accepting text user input in the text entry screen; and

(e) displaying an icon representative of a note at the anchor point.

46. The article of manufacture of claim 38 wherein the uploading the data to a server comprises:

(a) obtaining a socket connection;

(b) obtaining an inventory of resident mapsets;

(c) searching for markup data associated with the resident mapsets; and

(d) uploading all resident markup data to the server.

47. The article of manufacture of claim 46 wherein the markup data is uploaded to a server directory on the server using a hypertext transfer protocol PUT request.

48. The article of manufacture of claim 46, the method further comprising:

(a) downloading any new mapsets;

(b) deleting unreferenced mapsets; and

(c) deleting any markup data associated with the deleted mapsets.

49. An article of manufacture comprising a program storage medium

readable by a computer hardware device and embodying one or more instructions executable by the computer hardware device to perform a method for processing markup data for a map, the method comprising:

(a) obtaining a file comprised of markup data for a map;

(b) converting the markup data to coordinate data; and

(c) using the coordinate data to obtain a standard data format (SDF) file that can be used to superimpose the markup data on the map.

50. The article of manufacture of claim 49 wherein the coordinate data comprises mapping coordinate system (MCS) coordinates and the method further comprises converting the MCS coordinates to latitude/longitude coordinates.

51. An article of manufacture comprising a program storage medium readable by a computer hardware device and embodying one or more instructions executable by the computer hardware device to perform a method for obtaining redline markup data for a map on a personal digital assistant, the method comprising:

(a) determining when a new redline object has been selected; and

(b) obtaining a redline object while a stylus remains in contact with a screen of the personal digital assistant.

52. The article of manufacture of claim 51, the method further comprising:

(a) displaying a text edit dialog box on the screen of the personal digital assistant; and

(b) accepting text user input in the text edit dialog box.

53. The article of manufacture of claim 52, the method further comprising synchronizing the redline markup data with a server.

54. An article of manufacture comprising a program storage medium readable by a computer hardware device and embodying one or more instructions executable by the computer hardware device to perform a method for obtaining note markup data for a map on a personal digital assistant, the method comprising:

(a) determining when a new note object has been selected;

(b) accepting a user selection of an anchor point in a display of a map on a personal digital assistant;

(c) displaying a text entry screen on the personal digital assistant;

(d) accepting text user input in the text entry screen; and

(e) displaying an icon representative of a note at the anchor point.

55. The article of manufacture of claim 54, the method further comprising synchronizing the redline markup data with a server.

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